

Economic policies and technological development of Vietnam's electronics industry

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ECONOMIC POLICIES AND TECHNOLOGICAL DEVELOPMENT OF VIETNAM'S ELECTRONICS INDUSTRY

Abstract: This paper examines the impact of economic policies on the development of Vietnam's electronics industry. We identified, reviewed, evaluated and interviewed various stakeholders in the industry about the policies implemented by the Vietnamese government during the period 1986-2017. We argue that while the policy aiming at learning through technological spillover from foreign direct investment led to the specific level of the technological development, problems during its implementation coupled with institutional failures brought about unintended consequences. We conclude that trade liberalisation alone did not deliver the desired technological upgrading for domestic firms in Vietnam. Our paper provides policy implications for technological development in developing countries.

Keywords: Economic development policy, electronics industry, technological development, Vietnam.

1. Introduction

Promoting the development of an industrial base is one of the major focuses of economic policies in developing countries. In order to achieve this, many advocate a programme of technological capacity building, promoting government interventions focussed on indigenous technological change (Amsden 1991, Hobday, Cawson & Kim 2001, Kim 1992, Khan 2000, 2013, Lall 1992, 2000, Lall & Narula 2004, Paus 2008, 2012, Wade 1990). In many cases, these

approaches go hand in hand with stimulating technology diffusion from Foreign Direct Investment (FDI), in order to transfer knowledge and expertise into the host economy.

However, these approaches require governments to possess the capabilities to select and implement policies and learn from the successes and failures (Schmitz, Johnson & Attenburg 2015). As such, it is argued that the analysis of industrial development policy needs to focus on not only the policy outcomes but understanding the policy process (Rodrik 2007). Indeed, as it has been argued that little is known about the quality and the results of these government interventions in low and lower-middle-income countries (Altenburg & Lütkenhorst 2015), it appears pertinent to understand this process in more detail.

Understanding development policy has focussed on a broad range of mechanisms including (i) trade liberalisation, (ii) market deregulation, (iii) foreign direct investment, and (iv) macroeconomic stability. Yet, these policies have been criticised for assuming that technology simply appears from nowhere rather than be produced or learned, and information is free and symmetric (Khan 2000). In addition, these "laissez-faire" approaches, omit the role of incentives in the creation of technological capacity in developing countries, promoting efficiency but not attracting capital and new technologies in high value-added sectors. As such, state intervention is essential for correcting this market failure and promoting 'catch up' (Amsden 1991, Hobday, Cawson & Kim 2001, Kim 1992, Khan 2000, 2013, Lall 1992, 2000, Lall & Narula 2004, Paus 2008, 2012, Wade 1990).

However, the main drawback to state intervention is the creation and distribution of rents that arise, either intentionally or unintentionally, from the incentives created by policymakers. Therefore, this approach recognises that government intervention inevitably comes at costs.

Khan (2000) relates such costs to "rents", understood as a "minimum amount of incentives needed to attract suppliers of inputs to particular industries" (Milgrom and Roberts 1992: 269). Consequently, Khan (2000, 2012) argues that rent management should be framed as a process that creates and alters rights, leading a particular allocation of resources within an economy, with efficiency depending on the type of rent management mechanism utilised.

In order to contribute to this debate, this paper assesses the economic development policies enacted in Vietnam, across the past three decades. Using a rent management lens, the paper investigates the extent to which the Vietnamese government's economic policies contributed to the technological development within Vietnam in the period 1986-2017. After a prolonged economic recession, Vietnam started to reform its economic management mechanism in the late 1980s, focusing on three key pillars including lessening the control of the government over economic activities; liberalising trade with emphasis on export orientation and attracting foreign direct investment, together with growing the private sector. Since the country joined the WTO in 2007, Vietnam has established itself as a global production base with an increasing number of international players sourcing goods from the country (Pham, Monkhouse & Barnes 2017). Vietnam, thus, with its many chances for rent seeking, along with its successful economic performance, is a very appropriate country for an examination of the relation between rent seeking and development (Thoburn, 2020).

The paper contributes to further insights in the field of trade-based development policy by proposing that both trade liberalisation and economic incentives are necessary for technological development. However, the long-term result of relying upon these policies is the development of rent-seeking behaviour, the long-term consequences of which may stifle the growth of domestic firms.

The paper is structured as follows: Section 2 outlines the conceptual and theoretical underpinnings of the paper. Section 3 presents the methods used, while Sections 4 describe the findings. Section 5 discusses the findings with respect to the existing literature, followed by Section 6, which concludes the paper.

2. Theoretical Background

Drawing on neoclassical growth theory (Solow 1956, Swan 1956), a body of economic development studies proposes a number of mechanisms for developing countries to promote technological development and economic growth, namely (i) trade liberalisation, (ii) market deregulation, (iii) foreign direct investment, and (iv) macroeconomic stability. In particular, the extant literature suggests that FDI can promote innovativeness, productivity, and competitiveness through spillovers which allow local firms to adopt and adapt technologies that have been developed in more advanced countries. Yet, these policies typically rely on many assumptions based on a neoclassical model of economic growth (Khan 2000). For example, little consideration is given to whether capital or labour may require special rewards in particular sectors; new technology simply appears from nowhere and does not have to be produced or learned, information is free and symmetric, so no incentives had to be created for information to be efficiently used.

In contrast to the "laissez-faire" approach, the body of literature that examines the building of technological capacity in developing countries (Amsden 1991, Hobday, Cawson & Kim 2001, Kim 1992, Khan 2000, 2013, Lall 1992, 2000, Lall & Narula 2004, Paus 2008, 2012, Wade 1990) argues that markets work well at forcing producers to become more efficient but are

inadequate for attracting capital and new technologies in high value-added sectors. Thus, state intervention is essential for correcting this market failure and promoting 'catch up'.

Amsden (1991) argues that East Asia has been successful at technological building not because it has implemented free-market policies but because it has operated with an effective subsidy allocation, enabling the move from a low wage advantage to a high productivity advantage.

Lall (1992, 2000) argues that corrective government interventions rather than non-intervention are needed for technological development in developing countries. Lall (1992) suggests that the development of technological capabilities is an outcome of a complex interaction of incentive structure (mediated by government interventions to overcome market failures) with human resources, technological effort and institutional factors (each also strongly affected by market failures and so needing corrective interventions).

Paus (2012), based on the comparative case studies of five small latecomers (Chile, the Dominican Republic, Jordan, Ireland, and Singapore), proposes a shift in focus from growth to capability-accumulation and a shift from a faith in a market-led process of upgrading to an embrace of a proactive state to advance social capabilities in sync with the needs of firm-level upgrading are the best shot for an escape from the middle-income trap.

This literature strand also recognises that government intervention inevitably comes at costs. Khan (2000) relates such costs to "rents". The theory of economic development (Schumpeter, 1934) refers rents to excess profit earned by innovators. Later, the literature on rent and rent-seeking specifies rents as a "minimum amount of incentives needed to attract suppliers of inputs to particular industries" (Milgrom and Roberts 1992: 269). Schmitz et al. (2015) further

extend the concept as the portion of income paid to a factor of production in excess of its opportunity cost.

Rents are created when the state restricts the operations of the market such as the processes of rationing foreign exchange, curbing free trade, and licensing some aspects of economic activity creating 'rent havens' that can be captured by some combination of well-placed businesspersons and bureaucrats (Hutchcroft 1997). The earlier literature on rent and rent-seeking activities suggests that value-enhancing rents cannot exist because economic actors will always devise means to exploit rents create by a state (Krueger 1974, Posner 1975). This is because the fight for the privilege, known as rent-seeking, may encourage "unproductive profit-seeking" activities, sometimes legal (e.g. lobbying) and sometimes not (e.g. bribery) (Hutchcroft 1997). Developing countries, thus, are left with a policy implication that they should avoid rent-creation policies and develop institutions which minimise such rent-seeking. The premise of the earlier literature is the presumption of perfect market competition which is lacking in the context of developing countries.

In contrast to earlier approaches, Khan (2012) argues rents are a policy instrument that can either be destructive or developmental, depending on the management mechanism in place, which is defined as the configuration of politics, institutions, and industry organisation that produce the rent outcomes. As such, the creation and distribution of rents, either intentionally or unintentionally, gives rise to different incentives for different players, who may be the policymakers or enterprises. Consequently, policy-making and rent-seeking will interact and shape the development path of the sector. Khan (2000, 2012) suggests that rent management should be framed as a process that creates and alters rights, leading a particular allocation of resources within an economy, with efficiency depending on the type of rent management

mechanism utilised. Drawing on Khan (2000, 2012), Ngo (2020) illustrates how rent seeking can be channelled into positive directions, using eight case studies within three major Vietnamese industries (telecommunications, textiles and garments, and motorcycles).

The arguments by the rent management literature are similar to theoretical discussions in the "new industrial policy" literature (Rodrik 2007, 2009). Rodrick (2009) suggests that an approach based on "don't ask why, ask how" is the best method for implementing an industrial policy for economic development. Thus, in these terms, the rationale for industrial policy should be the maximisation of technological externalities, both static and dynamic in the form of learning-by-doing that is external to firms (Rodrik 2009). The conventional case against industrial policy rests on practical difficulties with its implementation (Rodrik 2009). Rodrik (2007) suggests that an analysis of policies needs to focus on not only the outcome but also the process of getting the policy right.

The "new industrial policy" perspective by Rodrick (2009) has been developed further by Kuznetsov and Sabel (2011) who note that "old" industrial policy focused on a justification of specific set of priorities while "new" industrial policy focuses on the governance of the priority-making process. Kuznetsov and Sabel (2011) argue that because policymakers invariably make mistakes, both intentional and unintentional, it is necessary to shift the focus from one-time selection of winners to the process of error detection and error correction of the choices (with corresponding attention to governance). If the priority-making process is right, the outcome should be a successful, vibrant industry in which enterprises have improved technological capacity and innovation capability. Thus, the analysis of the outcomes of industrial policy on the development of industry needs to cover not only policies themselves but also the priority-making and implementing the process.

3. Research Framework and Methods.

As noted in the introduction, this paper aims to explore the development of the Vietnamese electronics sector in order to plot the evolution of industrial policy and assess its contribution to the industry's development. To accomplish this, we develop an analytic framework based on the logic of design science paradigm “if you desire to achieve outcome O in context C, then use intervention type I” (Van Aken 2004, Denyer et al. 2008). Adopting this logic, we argue that the outcomes of an economic development policy depend on the context and implementation of the interventions. Thus, there is not a direct relationship between the objectives of policy interventions and outcomes, but the relationship is intermediated by the context and implementation of the interventions.

Therefore, in order to understand the factor influencing the development of Vietnam electronics industry, we use the analytical framework, illustrated in Figure 1, with four dimensions: (i) the objectives of policy interventions; (ii) context, (iii) implementation of policy interventions; and (iv) outcomes to guide our data collection and analysis. For the outcome, similar to Khan (2012), we distinguish between unexpected consequences and developmental outcomes.

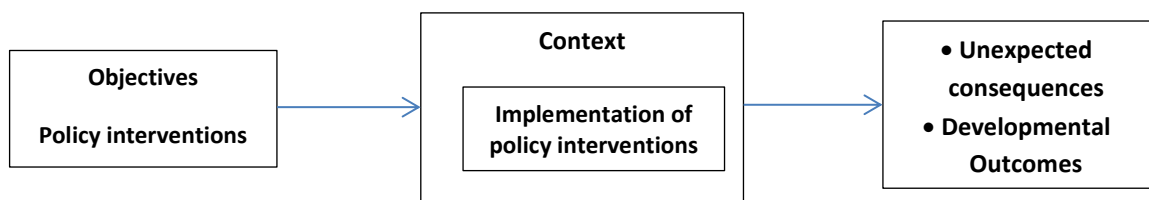


Figure 1: Analytical Model

In order to utilise our analytical framework, we first reviewed the development of the Vietnam electronics industry in the past up until 2017. We then traced back the policies that have been put in place by the Vietnamese government during the period 1986- 2017 and conducted inductive analysis about why such policies lead to such development outcomes. We collected data from both primary and secondary sources. Secondary data was obtained from Vietnamese government agencies and media reports. We first gathered media news and reports to establish an overview of the stage of development of the industry. We then identified the sample of government officers and experts based on their name cited in the news, articles found through our search with the keyword "điện tử" (electronics) from four major media and news agencies in Vietnam which include Vietnam News (<http://vietnamnews.vn/>), Vietnam Economy Times (<http://vneconomy.vn/>), Sai Gon Times (<http://www.thesaigontimes.vn/>) and Vietnam Television Broadcasting (<http://vtv.vn/truyen-hinh-truc-tuyen/vtv1.htm>). In-depth interviews with government officials and industry experts were conducted to gain more insights of the industry's development, background information on government policies applicable to the electronics industry in last 30 years, key winners and losers in the industry. We then established contacts with the firms identified by media, interviewed government officers and experts as winners and losers in the industry to arrange a fieldwork visit and interview. In total, we conducted 33 in-depth interviews with policymakers, senior researchers, and managers of enterprises in the electronics sector. The data collection process started in 2014 and completed in 2017. We apply pseudonym to indicate interviewees due to anonymity reasons. Table 1 shows the types and number of participants in our in-depth interviews.

Table 1: Types and numbers of research participants interviewed

Type of interviewee	Number	Aim of interviews
Government officials	5	To understand the implementation of policies aiming at industrial development.
Industry experts	8	To understand stage of technological development of the electronic industry and how the implementation of industrial policies affect the development of the industry.
Researchers	5	To understand policies aim at industrial development and stage of technological development of the electronic industry
FDI firms	5	To understand how firms have reacted to government policies; how government policies affect their investment decisions; barriers and facilitators for their technological development.
SOE firms	5	To understand how firms have reacted to government policies; how government policies affect their investment decisions; barriers and facilitators for their technological development.
Private firms	5	To understand how firms have reacted to government policies; how government policies affect their investment decisions; barriers and facilitators for their technological development.
Total	33	

4. The Development of Vietnam's Electronics Sector

Until late 1980s Vietnam was largely isolated from the capitalist world economy as a result first of war and then of US sanctions (Jenkins 2004). After years suffering a prolonged economic recession, Vietnam started to reform its economic management mechanism in 1986. During the 1990s, the Vietnamese economy underwent a transition from a centrally planned economy to a much more market-oriented system, and from a relatively closed economy to one which is increasingly integrated with the world market through trade liberalisation and promotion of foreign investment (Jenkins, 2004).

Vietnam's trade liberalisation intensified in the 2000s: (i) the bilateral trade agreement between Vietnam and the US; (ii) the accession by Vietnam to the WTO after many years of negotiations; (iii) the ASEAN Free Trade Agreement; and (iv) the harmonisation of domestic and foreign investment laws. The government also conducted further intensive reform of the state sector. The Law on Enterprise enacted in 2000, distinguished between state and non-state firms, starting a new development period for domestic enterprises. However, the environment for non-state enterprises was particularly unfavourable. The evidence shows that policies regulating business conditions placed a stranglehold on the development of non-state enterprises (Vietnam General Statistic Office 2016). However, by the 2010s, deepening economic integration into the world economy and intensifying reforms of the state sector, saw the government put more efforts in promoting the development of the non-state sector and digital economy (Vietnamese Government Portal 2019).

4.1. Early stages of development, 1986-2006

Following unification, Vietnam's electronics industry was relatively undeveloped. The period 1975-1985 was characterised by a socialist ideology where the regime controlled the entire economic system. Consequently, all Vietnamese electronics companies were state-owned and were mostly involved in small-scale assembly activities using imported components from Eastern Europe to produce TV sets and radios. Production was, however, relatively low as the sector was unable to produce significant quantities of components (Ministry of Industry and Trade of Vietnam 2016). Two major factors constrained the performance of the sector: (i) the US trade embargo imposed between 1975- 1994 meant that the electronics sector had little access to the technological inputs available in the Western countries; and (ii) the economy's prolonged recession throughout this period (Thang 2001) which meant that the resources, incentives, and motivations for investment in industrial upgrading were limited (Ministry of Industry and Trade of Vietnam 2016).

A series of reforms, introduced in 1986, designed to tackle these issues began to create the conditions for the initial development of the industry, increasing the production of higher technology components such as resistors, capacitors, and printing boards. By the end of the 1990s, the electronics industry had over 100 factories and units assembling consumer electronics products (Ministry of Industry and Trade of Vietnam 2016).

This period also saw a large number of small State-Owned Enterprises (SOEs) 'equitised', whereby many of the firms considered to be 'strategic' were transformed into corporations under the State Enterprise Law promulgated in 1995¹ and 2003², after which many of these 'equitised' SOEs became entitled to exclusive access to land (Athukorala and Tien 2012). This process of

¹ <https://thuvienphapluat.vn/van-ban/Doanh-nghiep/Luat-Doanh-nghiep-Nha-nuoc-1995-39-L-CTN-39099.aspx>

² <https://thuvienphapluat.vn/van-ban/Doanh-nghiep/Luat-doanh-nghiep-nha-nuoc-2003-14-2003-QH11-51698.aspx>

equitisation was undertaken with the hope that private participation in the management of the SOEs would enable them to operate more efficiently. While equitised SOE inherited land use rights, the private sector struggled in obtaining land to set up operations. Consequently, the 1993 Land Law by giving households the power to exchange, lease and mortgage their land use rights created a land market (Menon, van der Meulen Rodgers & Kennedy 2017).

At the same time, the introduction of Vietnam's Law of Foreign Investment (LFI) which was first launched in 1987, then revised in 1990, 1992, 1996 and 2000³ set out the statutory rights for foreign investment, providing access to the market through three activities: (i) business corporate contract (BCC), (ii) Joint-Ventures (JVs), and (iii) 100 percent foreign-invested company. In reality, when the LFI was implemented, difficulties in setting up 100 percent foreign equity firms in Vietnam meant that JVs with local Vietnamese partners was the most popular entry method. This resulted firstly from the fact that foreign investors lacked in-depth knowledge of Vietnam's market; secondly, Vietnamese firms would help them navigate the red-tape administrative systems, i.e. applying for licenses and permits; thirdly, the existing distribution network of domestic partners provided access to markets; and fourthly, access to land provided the means through which to create production facilities.

During this period, Vietnam saw a significant number of joint ventures set up by foreign direct investors and local firms (mostly SOEs). According to Vietnam's Ministry of Industry and Trade of Vietnam (2018), there were 2787 joint ventures established in the period from 1986-2006. The electronics industry thus evolved from a market dominated by SOEs to a market

³ <https://thuvienphapluat.vn/phap-luat/tim-van-ban.aspx?keyword=LU%E1%BA%ACT%20%C4%90%E1%BA%A6U%20T%C6%AF%20N%C6%AF%E1%BB%9AC%20NGO%C3%80I&match=True&area=0>

characterised by JVs between SOEs and foreign-invested companies, plus a significant number of small and medium privately owned electronics firms participating at the margins of the market.

Regarding technological capabilities, during this period, the sector had developed routine production capabilities, with the capacity to produce components such as resistors, capacitors, and printing boards. The increased capabilities were also reflected in increased exports of electronics products (assembled from imported parts and components, mostly by JVs), with new markets developed outside traditional markets within the former Soviet Union countries. In addition, home producers (brands such as Viettronic Dong Da, and Viettronic Tan Binh) began to compete with second-hand imports from Japan successfully.

However, the learning and innovating by local firms reflected the firms' efforts to copy the products of others rather than innovating themselves. They were not able to sense and respond to global technology trend in this fast-changing hi-tech industry. For example, Orion Hanel, a joint venture between South Korean investor and Vietnamese SOE, established in 1993 and went bankrupt in 2008 after 11 years being a leader in producing tube picture TV screen as a result of the failure to switch production to the flat TV screen (Vietnam Economy News 2009). Mr Hung, a general Secretary of Vietnam Electronic Business Association - in the interview conducted by a reporter from Vietnam Economy News in 2009 commented on Orion Hanel as below:

"When Orion Hanel was in the heyday, producing TVs with the picture tube, global giant TV producers already invested R&D in producing a new generation of TVs with flat-screen products. Orion Hanel could not keep pace with the advances in science and

technology, not enough money to invest in producing high-tech products". (Vietnam Economy News 2009).

However, the number of domestic firms who could meet the demand for sophisticated components was very limited. According to Vietnam WTO Centre (2009: 9), Vietnam's electronic product export turnover was USD 2.15 while the value of electronic components and parts imported was USD 2.96 billion. Thus, during this period, domestic electronics producers in Vietnam were able to successfully learn to make products more efficiently but not yet able to produce new innovative products; the industry had developed routine capabilities, but was not yet a centre of innovation and build production capability. At the start of the Twenty-First Century, the Vietnamese electronic sector still had weaknesses hindering its long-term development. Despite low tariffs on imports of raw materials and preferential loans, many domestic firms went bankrupt due to the capital withdrawal from a foreign partner in JVs. Besides, this period was characterised by a lack of significant technological upgrading and low productivity gains for domestic firms, who gradually lost on their home market.

It is noteworthy that during this period, rents were created but were destroyed later. When Vietnam economy was first opened through FDI laws, rents were created for SOEs who were (i) having capital and distribution network (the private sector is small), (ii) having access to land – acquiring land is not easy, (iii) having access to government authority and licensing issue. It should be noted that in the early of this period, private companies did not have trading rights (i.e. they did not have export and import licences). Implicitly, these conditions created the rents that foster the development of JVs. MNEs chose to make JVs with SOEs as an entry mode to take advantage of the rents given to SOEs and overcame the invisible barriers that hinder the operations of 100 percent foreign equity. However, after developing their bases in Vietnam,

these rents became less important. MNEs found no incentive to transfer technology to local partners. Meanwhile, local firms did not have incentives to upgrade technological capability (rents for learning does not exist). The critical moment was in 2006 when Vietnam, with its trade liberalisation commitment under ASEAN, removed its tariff for completed electronic products but still maintained 5% tariff for electronic components. Paying 5% tariff for imported components and parts while having to compete with cheaper electronic products from other ASEAN countries, electronic JVs in Vietnam were on the edge of bankruptcy. Rents previously created were destroyed, which havocted the whole electronic sector of the country, and as a result, the electronics sector declined at the end of this period.

4.2 The growth of the electronics sector – 2007- present

Faced with declining indigenous firms, the Vietnamese government began to introduce more radical solutions aimed at restructuring state enterprises to encourage and support reforms to reduce harassment, punitive taxation levels, licensing, land accessibility, finance, imports, and exports. At the same time restructuring of the global electronics industries, led by an increasing relocation of large MNEs, saw many moves out of China to Vietnam in order to reduce their production costs, locate nearer to their markets, and reduce their dependency on specific countries or suppliers (China plus one strategy) (Pham et al. 2017, Symington 2013, Zhao 2011).

Vietnam's membership of the WTO from 2007 enabled the country's electronics sector to grow significantly. By 2016, Vietnam was the 12th largest electronics exporter in the world and the third-largest in ASEAN (Ministry of Industry and Trade of Vietnam 2018). By 2017, the export turnover of electronic products exceeded \$70 billion (Ministry of Industry and Trade of Vietnam 2018). As around 95% of the export turnover of electronic products belongs to foreign

firms (Ministry of Industry and Trade of Vietnam 2016), the rapid growth of the Vietnamese electronics sector can be attributed to the multinational enterprises (MNEs) establishing their production hubs in Vietnam. By 2017, there were around 600 foreign electronics firms located in Vietnam, of which around 52% were the component and part producers (An 2017). Indeed, a majority of domestic enterprises operate in low-end segments of the electronics value chain, producing components, with the localisation rate of only 20-30%.

Behind this transformation is the Vietnamese government's 'Master Plan for the Electronics Industry' issued in 2016 which set out an ambitious vision for 2020, including: (i) generating half million new jobs, a significant portion of these being engineers, technicians, and middle managers; (ii) complementing these jobs with the development of domestic research capabilities; and (iii) shifting the initial concentration on the production of low-margin consumer goods towards special-use electronic products and production of materials for use in components.

To achieve this, the government was willing to provide significant inducements to attract the large hi-tech MNEs into Vietnam with the hope that their arrival would bring about employment, capital, and spillover effects for the industrial upgrading of local firms in Vietnam. Thus, policymakers were aware of the need to provide and happy to deliver significant rents to attract MNEs into the country. In an interview with us, a Government officer stated that:

"Big foreign investors have the right to ask for favourable conditions for their investments. In general, if the investment plans are good for the country, we should encourage them to invest here by offering special incentives". (Authors' interview, 2014)

Creating rents as inducements resulted in the delegation of powers to provincial authorities from 2006, where previously, the evaluation and licensing of FDI projects in Vietnam were centrally

managed. Provincial governments were given extra incentives to attract the FDI to their provinces with many provinces providing a variety of extra incentives, ranging from investment premiums and accelerated depreciation to tax holidays and reductions of land use fees. For land, these incentives include extended exemptions of on rent, subsidies for infrastructure, land clearing and surfacing, and preferential rents corresponding to the size of the project. The 2008 Law on High-Technology further expanded on the range incentives provided, including favourable tax treatment and preferential access to land. Following these developments coupled with rising wage cost in China and China-plus one strategy of MNEs, Vietnam saw a large influx of electronics sector FDI, particularly by large MNEs such as Brother Vietnam (Japan), Nidec Seimitsu (Japan), SOC Vietnam (Japan), JBL (USA), Terumo BCT (USA, Japan), Kyocera (Japan), Hitech BSE (South Korea), Fuji Xerox (Japan), Nokia (Finland), Samsung Electronics (South Korea), Laird (British). Existing large foreign investors in the electronics sector were awarded special tax exemptions (Vietnam Business News 2017).

These changes meant that industry insiders felt that the government treated foreign electronics investors better than the local producers. Interviews with private firms highlighted the problem of unequal treatment due to the government's policies. The Chairman of N&G Development Investment, a privately owned company, explained this point in more detail:

"Many policies are unequal in preferential policies for FDI enterprises and domestic enterprises, especially in supporting industries. For example, in the Law on Import and Export Tax, enterprises importing to produce direct export goods are entitled to tax incentives, so almost only FDI is enjoyed. While many Vietnamese enterprises produce parts for companies such as Samsung, LG do not receive preferential treatment."

(Authors' interview, 2017).

While the SOEs and foreign investors are being given preferential treatment, indigenous firms are losing out in the rent-seeking contest. This may, in part, help explain the underdevelopment of the supporting industry in general and the failure of domestic electronics firms. The consequence of these policies is that, while the Vietnamese electronics industry has grown significantly during this period, the domestic value added is very low due to the limited participation of local firms in the production value chain. Many JV factories have either gone out of business, diversified into other sectors, or are trying to survive by taking on processing contracts for MNEs. Note that the decline of JVs in this period was also partly caused by the trade policy which kept the import tariff for components at 5% while the tariff for complete products from ASEAN in 2006 dropped to zero. Paying 5% tariff on imported components made electronics JVs less competitive in the competition with cheaper electronics products from other ASEAN countries, leaving many JVs bankrupted. Consequently, there has no JV in electronics since 2010.

However, while it may induce rent-seeking, the influx of FDI into Vietnam provides evidence that global production networks are increasingly embedded within the country, with world-leading electronic firms now operating in all tiers of the electronics supply chain. For example, Intel, Foxconn, and Compal function as equipment manufacturing services and original design manufacturers, respectively while Samsung, LG, Nokia, and Canon manufacture original equipment but also undertake final assembly and customisation. In an interview with us, a chairman of Vietnam Electronics Industry Association said:

"In the global value chain of electronics, Vietnam has been involved in all aspects of production and assembly, such as components production and assembly. However,

Vietnam electronics value chains are heavily dependent on FDI enterprises". (Authors' interview, 2017)

The arrival of these large MNEs in Vietnam has created segregation between the FDI and the domestic firms in the electronics sector, leading to the “enclave economy” for the FDI firms. This is because local Vietnamese firms, which are often small and have limited capacity, are struggling to integrate into global electronics value chains led by these large MNEs. For example, Intel uses only 18 Vietnamese partners among hundreds of companies providing materials and components for its production. Samsung Electronics Vietnam uses only seven Vietnamese partners among its 93 suppliers, and these Vietnamese firms only provide low value-added activities such as packaging and printing while suppliers of high value-added are companies from South Korea or other ASEAN countries or foreign firms who have invested in Vietnam.

Integration in global value chains requires significant investment by local firms in term of both production capacity and organisational capability. The lack of skilled labour was often cited as the barrier preventing private firms meeting production capacity and organisation capability required by MNEs. Our data suggest that four out of five private firms said they struggled to recruit and retain skilled labour; almost candidates are inexperienced and lack of specialised, as well as soft skills and many, left for a higher paid job after mastering required skills. The 4P company, a private firm that has become suppliers to LG, Samsung, and Canon (4PCompany, 2019), revealed that investment in training of human resources is one of their success factors. In an interview with us, a director of 4P company said:

"it is difficult to recruit a graduate with required skills, so we have invested in our in-house training: on-the-job training, associate training and overseas training. Thanks to

the good quality of human resources, 4P products produced have met the strict standards of customers, including the most demanding partners"(Authors' interview, 2017)

On the other end, many MNEs blamed Vietnamese firms for not being able to meet their standards, so they have not used Vietnamese suppliers for components and parts but imported from their other subsidiaries in other countries. For example, a manager from Samsung stated that it was challenging to find Vietnamese companies which could meet their requirements regarding technology, the quantity of production line, and quality management.

"We have released a list of 170 components that Samsung wants to cooperate with domestic enterprises, but all the electronic enterprises, including the firms with 40-50 years of experience could not take this chance even with the simplest components like a battery charger, USB cable, and plastic". (Authors' interview, 2016)

In an interview with us, a manager of Canon Vietnam Ltd revealed:

"Canon sets a target of 70% localisation three years ago that has not been achieved yet. Of the 120 businesses currently supplying Canon, the number of enterprises with 100% Vietnamese capital counts only at the fingertips and also provides very simple equipment such as a carton box, packaging, and label" (Authors' interview, 2017).

In general, almost all representatives from MNEs shared the same viewpoint that the biggest concerns for electric and electronic equipment manufacturing enterprises are that they cannot buy equipment and spare parts in Vietnam. A manager of Canon Vietnam said:

"The cause of this problem is due to technological limitations; no domestic enterprises can produce with reasonable cost and quality in accordance with the requirements of Canon Vietnam" (Authors' interview, 2017).

Local Vietnamese firms have few incentives to invest in upgrading the technological capability to meet the standards imposed by these MNEs for two reasons. Firstly, the intense competition among firms and resulting in low margins discourage firms. Secondly, working with large MNEs involves taking on more tasks/jobs and increased risks. According to a representative of the Vietnam Electronic Industries Association, the Vietnam electronics industry is still limited, but no longer a "simple assembler".

"In fact, many domestic enterprises export components and are first-tier suppliers for foreign enterprises⁴. However, domestic firms are lacking in connection with FDI firms, leading to a lack of competitiveness in the context of international integration." (Authors' interview, 2017)

Although before joining WTO, the Vietnamese government applied local content requirement (LCR), asking FDI firms to meet 30% of product value made in Vietnam, the majority of FDI firms imported almost of their components and parts (90-100%) (Vietnam WTO Centre, 2009) and there was no penalty for them for not meeting LCR. FDI firms said their failure to meet LCR due to the scarcity of domestic firms who can meet the demand for sophisticated components. Upon WTO membership, Vietnam had to gradually remove Trade-Related Investment Measures (TRIMs) in its first 5-year membership and fully abolished TRIMS in 2018 when it was fully recognised as a market economy (Vietnam WTO Centre 2009). In post-WTO when gradually

⁴. The interviewee referred to foreign buyers who came to source for components but not involved in setting up FDI firm in Vietnam.

removing TRIMS, Vietnamese government relaxed LCR on FDI firms that include MNEs in the electronics industry. It worth to note that the Vietnamese government has strictly obeyed WTO rules, abolishing TRIMS without introducing any alternative measures. In an interview with us, an expert from the Ministry of Industry and Trade remarked:

"Vietnam was not as skilful as other ASEAN countries in adopting alternative measures to LCR" (Authors' interview, 2020)

As a result, Electronics MNEs could enjoy relaxing of local content requirements. After 2007, because of LCR not being strictly enforced, MNEs have not keen on taking domestic suppliers for high-value components in their supply chains. Consequently, with little technological transfer from MNEs to domestic suppliers in the electronic industry, domestic firms have been stuck in low-end segments of the electronic value chain.

Table 2 presents a summary of factors contributing to the development outcome of Vietnam's electronics industry in the two periods based on the dimensions of our analytical framework.

Table 2: Factors contributing to the development of Vietnam Electronics industry

	Period 1986-2006	Period 2007- 2017
Context	<ul style="list-style-type: none"> • Eastern socialist trading partners collapsed • Emergence of global outsourcing trend 	<ul style="list-style-type: none"> • Fast changes in global electronics and high tech industry • Intensive global outsourcing trend

Objectives of policy interventions	learning through foreign partners in joint ventures.	learning through a spillover effect of the presence of MNEs
Policy implementation	<ul style="list-style-type: none"> • A series of structural reforms introduced • Incremental trade liberalisation • Trading with East Asian and Western countries • Incremental privatisation 	<ul style="list-style-type: none"> • Intensive trade liberalisation • Intensive privatisation • Some schemes to support private SME introduced • Lack of effective vocational policies leading to shortage of skilled labour.
Unintended consequences	<ul style="list-style-type: none"> • SOEs were entitled favourable treatments in assessing land and capital while private sector struggled. 	<ul style="list-style-type: none"> • Too much favourable treatment for MNEs without enforcing MNEs' responsibility to engage domestic firms in their global value chains.
Developmental Outcome	<ul style="list-style-type: none"> • Evolved from a market dominated by SOEs to a market characterised by JVs between SOEs and foreign firms, and newly born SMEs privately owned firms participating at the margins of the market. • lack of significant 	<ul style="list-style-type: none"> • Boom of export turnover • A market dominated by MNEs • Integration of domestic firms in global production network but doing in low value added activities

- technological upgrading
 - low productivity gains for domestic firms
-

5. Discussion

The analysis outlines how significant policy interventions led to a specific path of development of Vietnam's electronics industry. In particular, we report that the policy objective aiming at learning through technological spillovers from FDI led to a level of technological development among domestic firms that was insufficient for them to become internationally competitive. This finding is in line with Pham, Dao and Reilly's (2010) empirical evidence of a positive relationship between technical efficiency and several measures of trade openness.

Compared to other East Asian countries, Vietnam's electronic industry has developed at a lower rate than that of South Korea. It took Vietnam's electronic industry twenty years (1996-2016) while it took Korea's electronics industry about ten years to pass through the two first stages of the three-stage of technological development (i.e. implementation, assimilation and improvement) described in Kim (1980) about Korea's electronics industry. After the twenty years, Vietnam's electronic industry is still far from embarking on the improvement stage.

Indeed, the stage of development of Vietnam electronics industry by 2017 is similar to those of Malaysia and Thailand in the mid-1990s (see Hobbay et al. 2001). By contrasting systems of governance in two East Asian first-tier newly industrialising economies (NIEs) (South Korea and Taiwan) with two second-tier South-East Asian NIEs (Malaysia and Thailand), Hobbay et al. (2001) illustrated the differences between sectoral systems of governance and firm

behaviours between the East Asian countries driven by local enterprise, and the South-East Asian economies led by foreign transnational corporations (TNCs). The disadvantage of FDI-led growth model of Malaysia and Thailand is the lack of linkage between FDI enclaves and other parts of the economy (Hobbay et al. 2001), and this is also evident in our study of Vietnam's electronics industry. The problem is encouraging FDI firms to go beyond enclave production is faced by many developing countries (Hobbay et al. 2001). Despite this problem, FDI has proved to be an effective export mechanism for Vietnam's electronics industry.

While the objectives of policy interventions aiming at learning through a spillover effect of the presence of MNEs in the economy appear legitimate, but again the policy implementation mechanism reduces the positive impacts of expected policy outcomes. The government has provided favourable treatment for MNEs without enforcing the responsibility to engage domestic firms in their global value chains. MNEs, due to their size, have the power to negotiate with the government for better terms and conditions for their investment into the countries.

Moreover, the Vietnamese government, due to their investment licensing decentralisation has little saying in the decision by local governments. The devolution led to competition for FDI among provinces, weakening the power of local government in monitoring MNE's fulfilment of obligations. Consequently, the development of Vietnam electronics industry has not reached expected outcomes. Both context and policy implementation process has limited development outcomes of this sector.

Driven by the inherent fragmentation in Vietnam's policy-making process and the government's inability to coordinate its industrial plans in line with its development agenda, the benefits created by policies designed to increase capabilities were neutralised by others.

Specifically, there is the lack of substantive supporting policy framework for the development of private SMEs in supporting industry and integration in a global production network, lack of a partnership between the public and the private sector in policy-making and the implementation process.

In the first period, the government promoted rents to SOEs, and subsequently, foreign firms benefited through joining with SOEs. In the following stage, given the pressure of liberalisation, the government then devised direct rents to foreign firms (and more so for MNEs) with some conditions attached with the rents, but there was no precise enforcement mechanism to follow up on foreign investors' fulfilment of the requirements. Thus, the appropriation of rents away from domestic to foreign firms underscores why SMEs development in Vietnam has been less successful.

Furthermore, the incentives provided have been asymmetric with foreign firms have been given many incentives without the corresponding incentives for SMEs. For examples, foreign firms establishing connections with local companies are entitled to specific incentives. However, there is a lack of corresponding incentives for domestic firms to establish linkages with foreign firms. From the local firms' perspective, doing business within the global production network is tough. To supply for global firms, local firms need to meet a high standard which requires more capital and skilled labour. Meanwhile, local private firms, due to their small size, struggle to compete with FDI or SOE firms in attracting capital investment and skilled labour. Without government support, it would be difficult for them to achieve this.

The Vietnamese government also failed to employ enforcement of conditions on rents. A critical point that Khan (2000) consistently made is that rents must be given with "conditions"

attached. Our research findings show that although the Vietnamese government started to negotiate for technology transfer in exchange for rents given to MNEs. But this agreement between MNEs and the government to provide diffusion of the technological and managerial capability to local firms has not been enforced. It is clear from the analysis that local firms need technical and expertise supports from foreign companies while the rents may have been created to subsidise such a process; the envisaged transformation has not taken place.

Our research findings illustrate that the open economy industrial policy, which focuses on linkages among domestic firms and between firms and the world market has contributed to positive development outcomes. It is clear that, after 30 years of opening the economy for trade and foreign direct investment, Vietnam's electronics industry has developed significantly.

However, the industry is now dominated by foreign firms while the technological development of domestic sector has been limited. One of the causes for the limited development of Vietnam domestic electronics sector is the problem of government's picking up the winner. In the early period of the trade liberalisation, state-owned enterprises had received more favourable conditions (i.e. land use right) than other types of enterprises. Later on, MNEs have been given more favourable treatment (i.e. lower corporate tax rate) than domestic enterprises.

Our findings are consistent with Paus' (2012) proposition that FDI does not automatically contribute to the advancement of technological capabilities in the host country. Our findings are also in line with Hausmann & Rodick's (2003) argument that adoption of openness to foreign technology and good institutions without necessary policy framework to exercise the amount of discipline over the foreign-invested sector is insufficient to spark a sustained process of economic transformation and growth.

Our findings indicate the need to shift the focus from a one-time choice of winners (sectors, industries, firms, and other organisations) to the process of error detection and error correction of the choices (with corresponding attention to governance). The solution is to design a process that can—through a variety of private-public partnerships—detect and correct mistakes (including those instigated by special interests) as Kuznetsov and Sabel (2011) suggest.

In the period 1996-2006, there was decentralisation in managing FDI. Different provinces in Vietnam in the competition for FDI coming in their provinces offer different non-tax incentives (Thang et al. 2016, Vu et al. 2007). Consequently, enforcement of conditions on rents was weak during the period 1996-2006. To some extent, our findings are in line with Khan's (2000: 133) arguments that formal institutional fragmentation is less critical for coordination than is the fragmentation of political power.

Our case of Vietnam's electronics industry indicates an ineffective incentive mechanism that causes a slow learning process to move away from a low wage advantage. According to Hobbay et al., (2001) the Malaysian and Thai governments provided infrastructure and incentives in both countries but rarely took a direct role in the activities of firms while in our case, Vietnamese government remains a directorship in the activities of SOE firms. This creates unfair competition among locals with different types of ownership to obtain incentives which are, in turn, partly attributed to Vietnam's slow learning process.

Note that our view on the ineffective incentive mechanism which the Vietnamese government used does not mean we dismiss the government's strength at error-correction in terms of creative learning as development proceeds as discussed in Fforde (2009). Indeed, a fine-tuning policy is a part of the factors leading to Vietnam' recent achievements in obtaining high

growth rate of the electronic industry and their economy in general. Our point is that if Vietnam had applied a more effective incentive mechanism, the industry could have developed to its full potential.

Specifically, if Vietnam had been as skilful as Thailand and Malaysia in introducing rent conditions, the capabilities of domestic firms and labour might have been much more improved. Thailand and Malaysia when joining WTO, they were no longer allowed to use LCRs from the early 2000s formally, but they skilfully introduced local content requirement indirectly (Natsuda and Thoburn, 2014). The Malaysian government used tax incentives for MNC's investment in training workforce of domestic companies. These companies could undertake new investments to upgrade their training equipment or expand their training capacities as companies providing technical and vocational training are eligible for an investment tax allowance of 100 percent for ten years (Malaysian Industrial Development Authority 2009).

The Thai government liberalised the country's automotive industry by abolishing local content requirements (LCRs) in response to WTO rules in 2000, and since 2002 has introduced a selective industrial policy in order to attract FDI and to expand the automotive and related parts industry. The government targeted particular national product champions by picking winning models to be developed in the Thai market, and by linking them with successful fiscal policies, such as the provision of excise tax reductions for particular types of models, hence creating a particular market. At the same time, it provided corporate tax exemptions for producers and their suppliers by linking with some local content requirements. Schemes in several ASEAN industries to enhance local labour training within MNCs, for example, in cooperation with the Japanese government, have helped improve labour skills. These schemes serve as indirect protection for the national producers, allowing them to receive various financial benefits

according to their local content ratio (Natsuda et al. 2013). These policies are not necessarily illegal under the WTO rules and appear to be success factors for the development of automotive component and part sectors in Thailand.

In contrast, Vietnam chose to strictly obey WTO rules, abolishing TRIMS without introducing alternative measures. This might be because Vietnam did not want to take a risk with using alternative measures and then not being recognised as a market economy, a critical requirement for Vietnam being treated equally under WTO rules. Our discussions of Vietnam's policies toward promoting technological development in relation to those of other East Asian and South East Asian countries consolidate what Thoburn (2020) contends, that is, different developing countries may differ in the types of rent for which they offer opportunities, and in their structure of rent-seeking, all affected by their different social norms, customs and motivations.

6. Conclusions and Implications

This paper investigates the effect of policy interventions by the Vietnamese government in the last three decades on the technological development of the country's electronics sector. We identified, reviewed, evaluated and interviewed various stakeholders in the industry about the policies implemented by the government of Vietnam related to the industry's development.

We find that after thirty years of market and trade liberalisation, giving investment incentives to attract foreign investors, the electronics industry has significantly developed and become one of Vietnam's chief export earner and the leading contributor to manufacturing value-added and employment. However, in terms of technological progress, Vietnam's electronics

industry has made relatively limited achievements. Unlike the experience of Korea and Taiwan where local firms have driven the catch-up process, but similar to Malaysia's experience (see Rasiah, 2010), MNEs have dominated electronics production and exports in Vietnam. Many domestic firms have been able to produce inputs for use by international brands, but not been capable of developing their own brand names in the international electronics consumer market. We conclude that the market and trade liberalisation reforms alone did not deliver the desired technological upgrading for domestic firms in Vietnam's electronics industry. For this to happen, it would require careful policy design, analysis and coordination to ensure that incentives given in conjunction with the enforcement of responsibilities. In other words, it could be briefed that Vietnam's use of rent based policy measures was not implemented as well as it could have been.

Our paper makes several contributions to the literature. *First*, our paper expands the literature of technological development in developing countries by providing empirical evidence from Vietnam, an emerging low middle-income country. We propose that both trade liberalisation and economic incentives are necessary for technological development but using incentives may lead to rent-seeking behaviour, the long-term consequences of which may stifle the development of domestic firms. We provide empirical evidence that the lack of incentives for local firms – and instead, historically only for SOEs and then MNEs who are not held to their commitments to transfer knowledge to local firms – is partly to blame for Vietnamese SMEs not taking advantage of the potential spillover benefits that one would expect when having high tech global corporations in the country. *Second*, our paper proposes the use of the analytical framework linking context, policy interventions, and development outcomes to study the impact of economic policies on the development of an industry or economy. Using this framework, we were able to detect the behaviour and action taken by the policymakers in the creation and

distribution of rents and the enterprises in seeking rent benefit together with the dynamic of the global context of the industry would shape the course of development of the sector. This basic framework enables researchers to explore, discover, and experiment to analyse the effect of economic policies on the development outcome of an industry or economy when examining economic policies, as Rodrik (2007) suggests.

For policymakers, we suggest that economic policy aiming at technological development should be designed with caution about picking up the winners. Ownership should not be used as criteria for the incentives. Private firms should be given equal treatments to SOEs and FDI firms. The incentives need to be given with conditions and enforcement of the implementations. The government has been to facilitate, promote and retain foreign investment but also has to enforce FDI firms to create linkages with other parts of the economy. Integrate FDI firms into the technological infrastructure, through more recognition of their importance and greater inclusion in the policy-making process.

More importantly, we advise policymakers to develop a public governance mechanism which enables the dialogue between private and public to shift the focus from a one-time choice of winners (sectors, industries, firms, and other organisations) to the process of error detection and error correction of the choices (with corresponding attention to governance). The dialogue between policymakers and enterprises are essential for the development of policy-making and implementation.

The paper has some limitations. It based on evidence from one industry in one country and was developed from qualitative data. Although our study used the triangular approach to

compare and check the validity of responses with other credible sources, information obtained from interviews is unavoidable to be free from the bias of respondents' viewpoint.

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